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(11)

EP 0 657 737 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
10.04.1996 Bulletin 1996/15

(43) Date of publication A2:
14.06.1995 Bulletin 1995/24

(21) Application number: 94308986.2

(22) Date of filing: 02.12.1994

(51) Int Cl.⁶: **G01N 33/543**, G01N 27/00,
G01N 33/58, G01N 33/531,
C07D 495/04, G01N 33/53
// (C07D495/04, 333:00,
235:00)

(84) Designated Contracting States:
DE GB SE

(30) Priority: 13.12.1993 US 167273

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(54) **Method and reagents for binding chemical analytes to a substrate surface, and related analytical devices and diagnostic techniques**

(57) A method for detecting an analyte of interest in a sample includes the steps of binding the analyte to the surface of a substrate through a biotin-biotin binding protein interaction, contacting the surface-bound analyte with a quantitatively detectable analyte-binding moiety

that binds thereto, measuring the quantity of detectable moiety bound to the substrate surface (11) and deriving therefrom the quantity of analyte in solution. A preferred use for the present method is in conjunction with a piezoelectric surface transverse wave device.

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EUROPEAN SEARCH REPORT

Application Number
EP 94 30 8986

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, vol. 112, no. 8, 11 April 1990 DC US, pages 3239-3241, XP 000561231 R. C. EBERSOLE ET AL 'Spontaneously formed functionally active avidin monolayers on metal surfaces: a strategy for immobilizing biological reagents and design of piezoelectric biosensors.' * page 3239 - page 3240 * ---	1-7, 11, 12	G01N33/543 G01N27/00 G01N33/58 G01N33/531 C07D495/04 G01N33/53 /(C07D495/04, 333:00, 235:00)
X	ELECTROCHEM. SENS. IMMUNOL. ANAL., 1987 pages 279-291, XP 000561742 M. AIZAWA 'Bioaffinity electrochemical sensor with preformed metastable ligand-receptor complex.' * page 279 - page 282; figure 1 * ---	1-5, 12	
X	ANALYTICAL LETTERS, vol. 24, no. 2, 1991 NEW YORK, US, pages 191-198, XP 000561137 K. R. ROGERS ET AL 'Light addressable potentiometric biosensor for the detection of anticholinesterases.' * the whole document * ---	1, 3-12	TECHNICAL FIELDS SEARCHED (Int.Cl.6) G01N C07D
X	ANALYTICAL CHEMISTRY, vol. 61, no. 10, 15 May 1989 COLUMBUS US, pages 1069-1072, XP 000082907 S. LUD & D. R. WALT 'Avidin-biotin coupling as a general method for preparing enzyme-based fiber-optic sensors.' * page 1069 - page 1070 * ---	1, 3-7, 12	
-/--			
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 5 February 1996	Examiner Moreno, C
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons #: member of the same patent family, corresponding document			

EPO FORM 1503 (01.91) (P/C/D/H)



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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	CHEMISTRY LETTERS, no. 7, July 1993 TOKYO JP, pages 1231-1234, XP 000561230 J. ANZAI ET AL 'Electrochemical preparation of active avidin films for enzyme sensor applications.' * page 1231 - page 1232, line 6 *	1,3-7,12	
A	EP-A-0 295 965 (GENE TRAK SYSTEMS) 21 December 1988 * the whole document *	1,3	
A	EP-A-0 142 301 (SERONO DIAGNOSTICS LTD) 22 May 1985 * the whole document *	1,3	
A	WO-A-92 10758 (BIOCIRCUITS CORP) 25 June 1992 * the whole document *	1,3	
P,A	ANALYTICA CHIMICA ACTA, vol. 289, 1994 pages 321-327, XP 000561139 T. HOSHI ET AL 'Electrochemical deposition of avidin on the surface of a platinum electrode for enzyme sensor applications.' * the whole document *	1,3,12	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 5 February 1996	Examiner Moreno, C
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons a : member of the same patent family, corresponding document</p>			

EPO FORM 150 (3.92) (P64C61)